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AEROSOL NUMBER CONCENTRATION AND SIZE DISTRIBUTION IN THE MID-LATITUDE EASTERN NORTH PACIFIC

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ABSTRACT

CN and CCN concentration, and size distributions of aerosol particles with optical diameter greater than 60 nm, were measured along repeated transects between Los Angeles and Honolulu as part of the DOE-sponsored MAGIC field campaign between October and December, 2012, and between May and October, 2013. Number concentrations of aerosol particles with optical diameters greater than 60 nm typically ranged from 50-150/cm3, punctuated by short duration spikes ascribed to exhaust from other ship traffic. Concentrations were generally rather constant along a given transect but exhibiting high variability among transects. Total number concentrations of aerosol particles with mobility diameter greater than 10 nm were generally about 50% greater than those with optical diameter greater than 60 nm. Size distributions typically showed a peak in dN/dlogD near optical diameter 140 nm, with indication of another peak at optical diameter less than 60 nm. These number concentrations and chemical composition from analyses of aerosol samples collected during the campaign permit inferences to be drawn about the rate of size-dependent particle production flux at the sea surface.